

Status Finland

Title
Speaker
Event
Date

Eero Hietanen – NLS-FI

SDI.Next: Linked Spatial Data in Europe

12th of March 2019



Content

1. National Geospatial URI Strategy in Finland
2. AU and GN as Linked Data Prototype – Open European Location Services
3. Linked Data Pilot on Building data – Geospatial Platform

URI STRATEGY

National recommendation on implementing URIs on geospatial data

- "JHS 193 Unique identifiers of the geographic information" Released 2015
- Available in English
<http://www.jhs-suositukset.fi/web/guest/jhs/recommendations/193>

Defines the structure of spatial data URI:

- URI:
`http://paikkatiedot.fi/{type}/{datasetID}/{localID}/{versionID}`
- INSPIRE URI:
`http://paikkatiedot.fi/so/{datasetID}/{theme}/{class}/{localID}/{versionID}`

URI STRATEGY

Defines a domain for geospatial data URIs :

<http://paikkatiedot.fi> – “spatialdata.fi”

Paikkatiedot.fi:

- Centralized national spatial data URI redirection service
- Maintained by NLS-FI
- Implemented using CSIROs PID Service Software

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3. Linked Data Pilot on Building data – Geospatial Platform

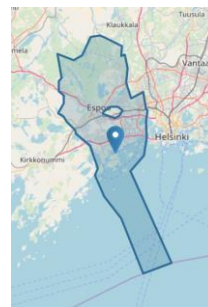
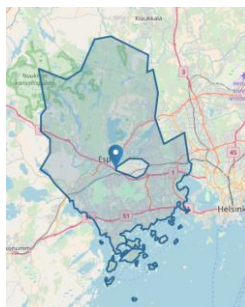
Geographical Names (GN) Dataset

- National dataset of geographical names
 - NamedPlace including 1 to many geographical names (flatted schema)
 - 800000+ named places
 - Download service (GML)



Administrative Units (AU) Dataset

- National dataset of administrative units
 - Boundaries based on NLS FI cadastral registry
 - Includes Municipalities (311), Regions (19) and Regional State Administrative Agencies (6).
 - Different generalization levels available (original scale 1 : 10 000)
 - Two versions of geometries: with or without sea areas.
 - (For RDF only 1 : 1 000 000 without sea areas in this case).



OpenELS: GN and AU to Linked Data

Transformation:

Download services → PostGIS (with QGIS)
→ Jena RDF store (with Python RDFLib).

Services:

Jena Fuseki SPARQL endpoint: <http://193.167.189.160/openels/fuseki/ds/sparql>

URI Service (RDF-formats, no html) – "Paikkatiedot.fi" URIs

- <http://paikkatiedot.fi/so/openels/au/AdministrativeUnit/091> (Municipality of Helsinki)
- Own URIs for geometries: <http://paikkatiedot.fi/geom/openels/au/AdministrativeUnit/091/1mwosa> (geometry of Helsinki)
- <http://paikkatiedot.fi/so/openels/gn/NamedPlace/10342733> (Named place of Helsinki)

Datastory (with Netherlands, Norway and Spain)

<https://data.labs.pdok.nl/stories/OpenELS/>

au:AdministrativeUnit and geometry

```
<http://paikkatiedot.fi/so/openels/au/AdministrativeUnit/091> a au:AdministrativeUnit,  
    mmlau:Municipality ;  
    rdfs:label "Helsinki"@fi,  
        "Helsingfors"@sv ;  
    au:AdministrativeUnit.geometry <http://paikkatiedot.fi/geom/openels/au/AdministrativeUnit/091/1mwosa> ;  
    au:AdministrativeUnit.name <http://paikkatiedot.fi/so/openels/gn/NamedPlace/10342733> ;  
    au:AdministrativeUnit.nationalCode "091" ;  
    au:AdministrativeUnit.nationalLevel <http://inspire.ec.europa.eu/codelist/AdministrativeHierarchyLevel/4thOrder> ;  
    au:AdministrativeUnit.upperLevelUnit <http://paikkatiedot.fi/so/openels/au/AdministrativeUnit/01> ;  
    dcterms:license <http://creativecommons.org/licenses/by/4.0/> ;  
    void:inDataset <http://paikkatiedot.fi/ds/openels/au/AdministrativeUnit>,  
        <http://paikkatiedot.fi/ds/openels/au/AdministrativeUnit/municipality> ;  
    rdfs:seeAlso <http://dbpedia.org/resource/Helsinki> .  
...
```

```
<http://paikkatiedot.fi/geom/openels/au/AdministrativeUnit/091/1mwosa> a sf:MultiPolygon ;  
    mmlau:hasSeaAreas false ;  
    mmlau:scale 1000000 ;  
    dcterms:description "1 : 1 000 000 scale polygon geometry, without sea areas"@en,  
        "1 : 1 000 000 mittakaavainen polygon esitys, ilman merialueita"@fi ;  
    ogc:asWKT "MULTIPOLYGON (((25.074157 60.106875, 25.065839 60.102429, 25.064181 60.102252,  
        25.054127 60.098997, 25.051629 60.097318, 25.047107 60.095692, 25.043694 60.095401,  
        25.041275 60.100965, 25.041299 60.101763, 25.042633 60.102910, 25.042932 60.104496,  
        ...
```

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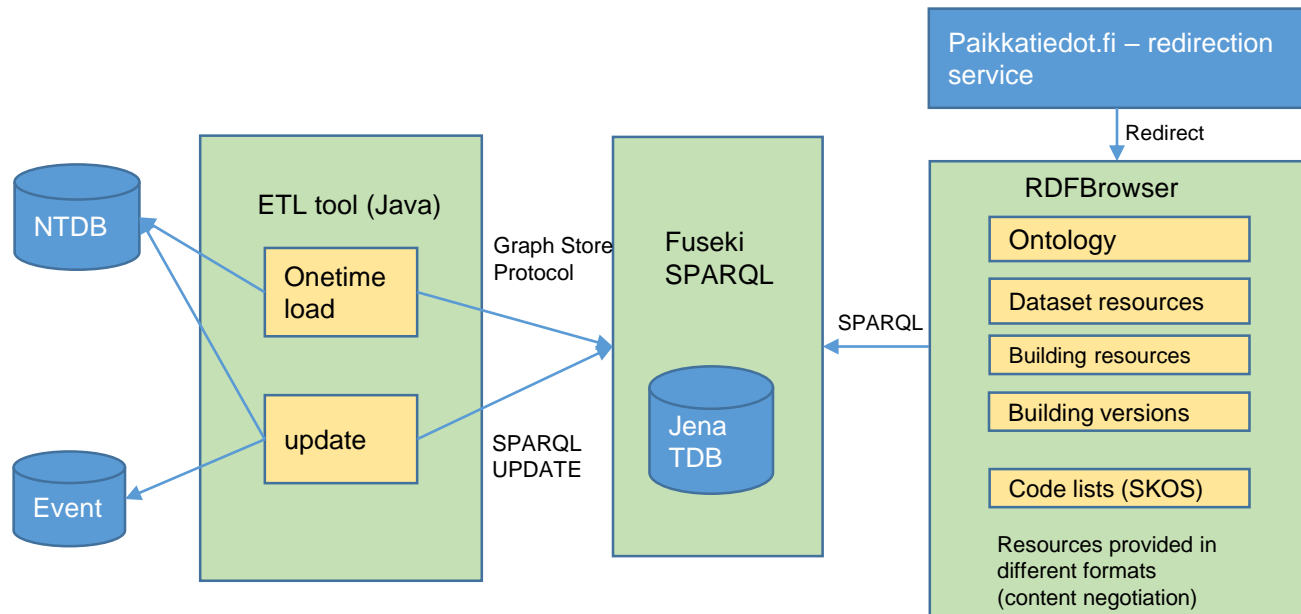
LD PILOT ON BU THEME

- Geospatial Platform project (2018→)
 - Platform collects spatial data from various public administration providers and makes them available to users
 - Harmonized data models (national and INSPIRE)
 - Standard services (WMS, WFS...)
 - National Topographic Database is one of the subprojects
 - Renewal of the NLS's topographic database data models, production processes
 - Design and development of Buildings theme during 2016-2018
 - Not in production yet, planned productional deployment 2020 with Geospatial Platform
 - The goal: best available public administration buildings data in 2D and 3D
 - Data from the renewed topographic database as well as from municipalities
 - Every building has a persistent http URI

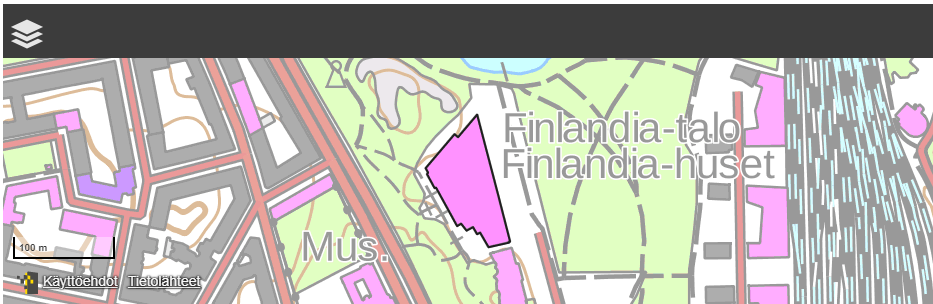
LD PILOT ON BU THEME

→ Linked Data product pilot

- Automatic scripts for generating RDF data from relational spatial database (PostGIS)
 - Data was stored as triples in RDF database (Apache Jena Fuseki)
 - Data maintenance process was also successfully automated in pilot
 - Up-to-date Buildings as Linked Data product
 - Buildings data was linked with the named building (from GN pilot)
 - Also links to Wikipedia and Wikidata
 - HTML data cards and RDF URI service was built on top of the SPARQL endpoint.



http://paikkatiedot.fi/so/kmtk_building/715591e5-9a50-4f43-8574-143765c7273d



Feature:

inDataset http://paikkatiedot.fi/ds/kmtk_building/00100
http://paikkatiedot.fi/ds/kmtk_building

hasVersion http://paikkatiedot.fi/so/kmtk_building/715591e5-9a50-4f43-8574-143765c7273d/1

isDefinedBy http://193.166.24.39/doc/kmtk_building/715591e5-9a50-4f43-8574-143765c7273d

Lifespan:

created 29.12.2017 2:33:37

Location:

lat 60.176096911143894

long 24.93340359405658

Properties:

buildingFunction Liike- tai julkinen rakennus, 3-n krs

Available in formats: [RDF/XML](#) [Turtle](#) [JSON-LD](#)

COMBINING INFORMATION TO NTDB BUILDINGS

LinkedData4U

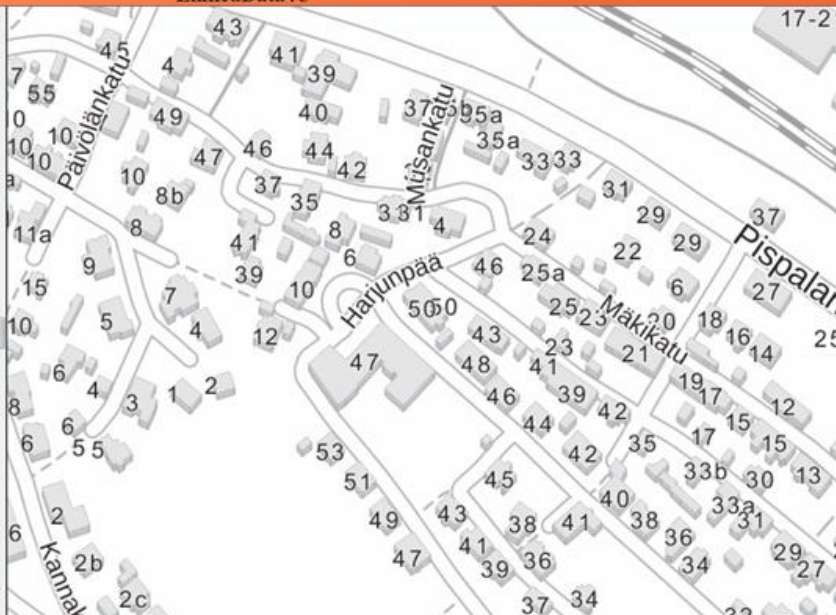
Painotukset: ?
Osoite: Sorilanraitti 5

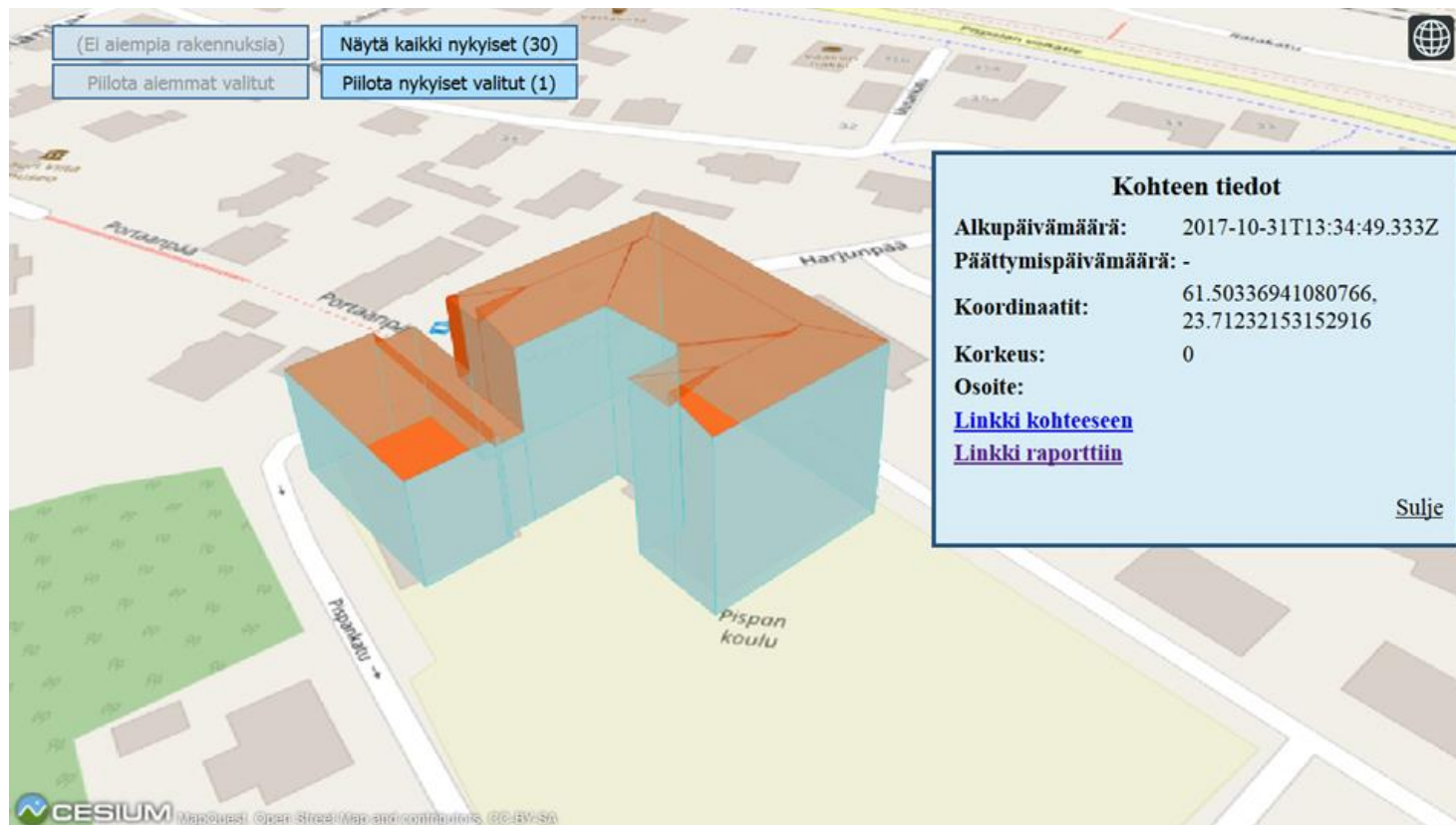
Peltolammin koulu -
Oppilasmäärä: 181
Kielitarjonta: englanti, saksa
Painotukset: ?
Osoite: Säätäjänkatu 16

Pispalan koulu -
Oppilasmäärä: 232
Kielitarjonta: englanti, kiina, ranska
Painotukset: musiikki
Osoite: Pispalanharju 47
Linkki KMTK-kohteeseen: [KMTK-ID](#)

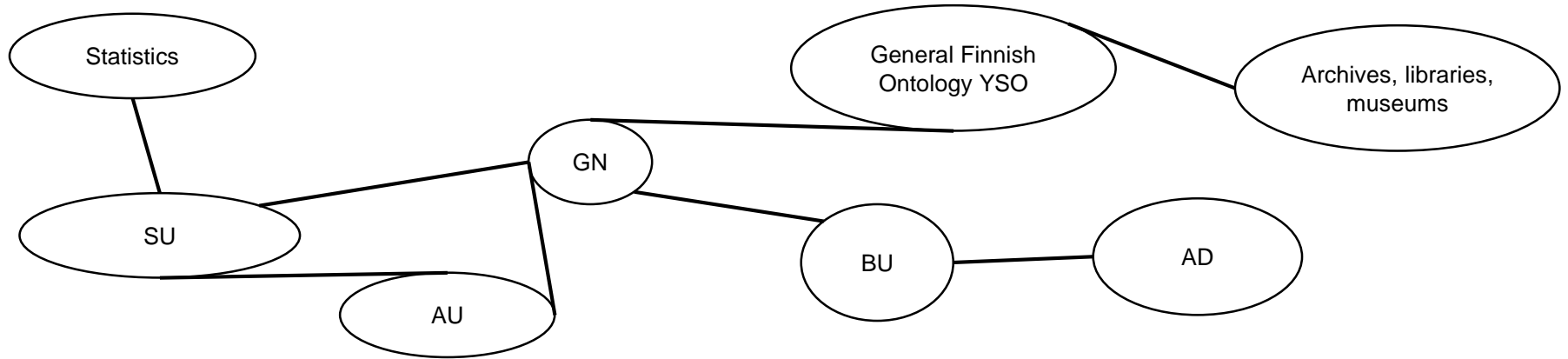
Pispalan koulu, Hyhkyn koulutalo -
Oppilasmäärä: 130
Kielitarjonta: englanti
Painotukset: ?
Osoite: Mallastehtaankatu 14

Pohjois-Hervannan koulu -





CONCLUSIONS



- There are already a lot of relationships between datasets
 - GN theme is the "glue" between many themes
- Persistent HTTP URIs and common ontologies are vital for linking dataobjects
- RDF/SPARQL is much more applicable than GML/WFS when combining data from different sources
- LD approach can bring most benefit for users who need to combine data from many source

MORE INFO:

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MML
MAAN-
MITTAUS-
LAITOS